

# HIGH VOLTAGE POWER SUPPLIES TEST EQUIPMENT COMPONENTS

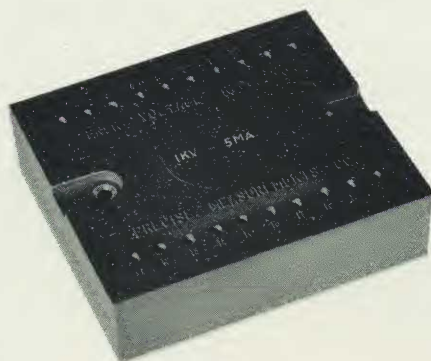
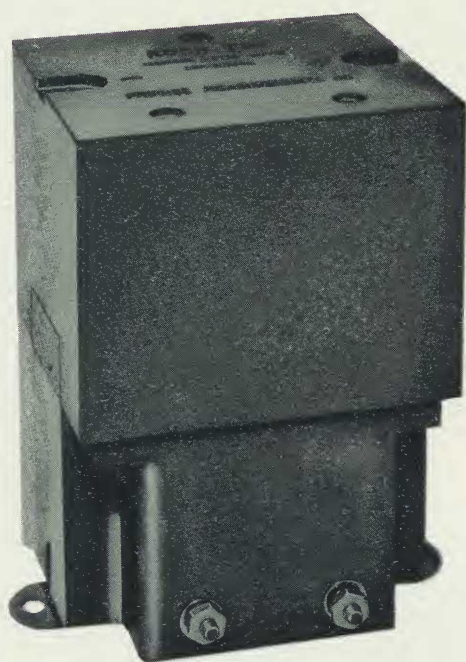


***Industrial Instruments* INC.**

PRECISE MEASUREMENTS DIVISION

89 COMMERCE ROAD, CEDAR GROVE,  
NEW JERSEY 07009

# PACKAGED POWER SUPPLIES



These new low-cost units make DC voltage problems easy. Just wire input and output connections, and the unit is ready to operate. Building block construction provides a basic transformer, a rectifier unit, and where necessary a regulating device. These three elements bolt together quickly and maintenance is simplified should any of the components fail. Each of the three basic building blocks are mechanically constructed in a molded Diallyl Phthalate shell and encapsulated with epoxy resin.

The output is completely isolated and either post may be grounded or the unit operated as a floating supply. The DC voltage is filtered and provides 5% or less ripple. Output may be varied from full rating down to zero by simply inserting a small adjustable transformer in the input. Most units are rated for 5 ma. current. Power supplies 7.5 KV and higher have modified mechanical construction from that described above. Input 115V, 60 cycle.

Use with High Voltage Zener Regulators to obtain 1% line and load regulation.

MODEL	OUTPUT VOLTAGE	MODEL	OUTPUT VOLTAGE
15-0-15-500MA	15-0-15 Volts	10-KV-5MA	10-KV-DC
30-0-30-100MA	30-0-30 Volts	15-KV-5MA	15-KV-DC
05-KV-5MA	500 Volts DC	20-KV-5MA	20-KV-DC
1-KV-5MA	1-KV-DC	30-KV-5MA	30-KV-DC
2-KV-5MA	2-KV-DC	*50-KV-5MA	50-KV-DC
3-KV-5MA	3-KV-DC	*75-KV-5MA	75-KV-DC
5-KV-5MA	5-KV-DC	*100-KV-5MA	100-KV-DC
7.5-KV-5MA	7.5-KV-DC		

\* Oil-filled tank type construction

## VOLT BOXES

Use these convenient reference standards or volt boxes for direct calibration of voltmeters, or use as a null type voltmeter by simple addition of a galvanometer. These standards consist of a Precise Resistive Voltage Divider with the input to the Divider regulated by means of a zener diode string. In order to maintain the high inherent accuracies, it is essential that the measurements be of the null type with no current flowing at the time of measurement. Each VZA STANDARD has twenty taps arranged in two rows. The bottom row is exactly 1/10 the voltage drop of the top row. Type VZ STANDARDS have just one known voltage (without taps), resulting in cost savings and is used for standard cell replacement. Precise Voltage Standards have several advantages over chemical cells, since they are completely solid state and can take voltage and current overloading without loss of accuracy. May be powered from batteries, external power packs or purchased

complete with built-in power source. Several standards may be wired in series for higher voltages or finer adjustment. All reference standards listed have 1% accuracy. Higher accuracy types rated 0.1%, 0.01%, and 0.001% available at higher cost.

### TYPE VZA STANDARDS

VOLT	MODEL	TAP VOLTS
1.000	VZA-1	.01 & .1
5.000	VZA-5	.05 & .5
10.00	VZA-10	.1 & 1
100.0	VZA-100	1 & 10
1,000	VZA-1K	10 & 100
2,000	VZA-2K	20 & 200
4,000	VZA-4K	40 & 400
5,000	VZA-5K	50 & 500

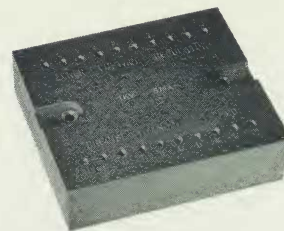


# HIGH VOLTAGE ZENER REGULATORS

REGULATE UP TO 20,000 VOLTS

Simply connect in parallel\* with any high voltage power supply and automatically obtain both line and load voltage regulation as well as ripple reduction. Nominal current rating is 0.5 to 1 MA for better than 1% stabilization. Regulation over range of 0 to 5 MA is 3%. Can be wired in series for high voltage service (five 4,000 volt types to regulate a 20,000 volt power supply). Twenty built-in taps included, each provides a regulated voltage to an accuracy of 20%. Ideal for photomultiplier tubes. Use as a high voltage reference in conjunction with regulator amplifier circuitry.

\* If necessary, insert a series resistor to limit zener current to under 5 MA.



MODEL	TOTAL VOLTAGE	VOLTS AT EACH TAP
ZA-1K	1,000 Volts	50 Volts
ZA-2K	2,000 Volts	100 Volts
ZA-3K	3,000 Volts	100 & 200
ZA-4K	4,000 Volts	200

# PORTABLE HIGH VOLTAGE DC POWER SUPPLIES

One of the most popular power supplies on the market. Completely redesigned for greater ruggedness and convenience of operation. Widely used for powering electronic equipment and for routine breakdown and insulation testing. Output voltage is well filtered D.C. which is adjustable with convenient front panel control. Input is 115 Volt, 60 cycle A.C. Larger 6" precision 1% mirror scale movement available on order. Regulated models offer closely stabilized output voltage regardless of line or load changes.

MODEL	MAX. VOLTAGE
6000-1	1,000
6000	2,500
6005	5,000
6010	10,000
6015	15,000
6025	25,000

**NOTE:** Regulated power supplies are of the radio frequency type (RF) and adjust from approximately 20% to full rated voltage. Regulation is in the order of  $\pm 1\%$  over most of the range. These supplies are rated at 100 microamps. Transformer operated unregulated supplies are available in 1 and 5 milliamper types and have a range of zero to full voltage output. These are recommended for industrial service applications. When ordering add the proper prefix to the basic model number, for example, RF, 1 MA, or 5 MA, depending on your requirements.



**OPTIONS:** Mirror Scale Higher Accuracy Meter. Recommended for more exact calibration or test purposes. (Illustrated)

**Additional Built-In Current Meter** (both meters are 3 inch size), including automatic meter protector circuit.

# INSULATION TEST SETS



Used in testing insulation where AC voltages are desired. Dual instruments are also available which provide choice of AC or DC output. Includes kilovoltmeter, current meter and automatic overload limiter circuits. Metering accuracies are  $\pm 3\%$ .

The basic model number covers A.C. types. Add the prefix AC/DC to the basic model number for the dual output type.

MODEL	VOLTAGES	VA
3000	0 to 3,000	75
3010	0 to 3,000	300
3050	0 to 3,000	1,500
3100	0 to 6,000	3,000
5000	0 to 5,000	75
1000	0 to 10,000	75
*1500-AC	0 to 15,000	75
*2500-AC	0 to 25,000	75
*2500-DC	0 to 25,000	2.5
*4000-DC	0 to 40,000	2.5

\* Available AC only  
▪ Available DC only

# KILOVOLTMETERS MEASURE 100,000 VOLTS AC OR DC

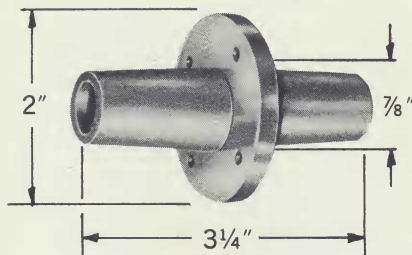
Large rugged 6 inch precision mirror scale meter, ideal for use in lab or field testing. Completely transistorized with stabilized anti-drift circuitry resulting in sensitivity in the order of a few microamperes. Battery operated unit using long life, self-contained mercury batteries. Panel mounted trimmers provide for recalibration when required. Uses fast spike bypass circuitry and a novel automatic voltage coefficient compensator for the multipliers. Special high voltage probes supplied with instrument. The low voltage probe is used on the 5 and 10 KV range, with the larger high voltage probe used on the higher ranges. The accuracy of the basic instrument is  $\pm 1\%$  of full scale on DC,  $\pm 2\%$  of full scale on 60 cycles. The probe accuracy is  $\pm 2\%$  on the 5 and 10 KV range and  $\pm 4\%$  on the 50 and 100 KV range.

Where greater than the usual accuracy is required a Model 40 Precision Standard Divider is available as an accessory for use with the Model 50 and 60 KV meter. The Model 40 Divider is used in place of the probe normally supplied with the instrument. This unit consists of a series of wire-wound standard resistors arranged in a spiral with a special corona guard ring. Accuracy  $\pm 0.1\%$ .

**RANGES:** 0 to 5,000/10,000/50,000/100,000 volts DC or 60 cycles AC.  
                     Model 60-DC only                      Model 50-AC and DC



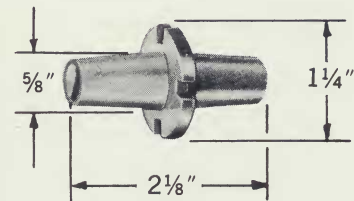
## HIGH VOLTAGE CONNECTORS



**MODEL C-1**  
 Rated for  
 25,000 volts DC  
 Maximum

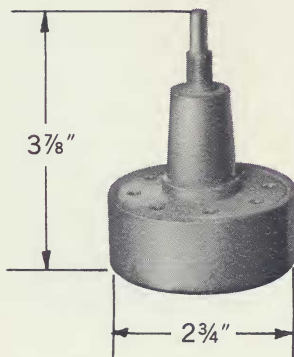
These high voltage connectors are sturdily constructed of Modified Diallyl Phthalate for superior arc resistance and low power factor. Miniature physical size is combined with extra long air paths. Sealed center conductor will handle up to 20 amperes. Neoprene gasket included for mounting on oil-filled tanks. Easily mated with any standard banana jack for quick disconnect, or 10/32 machine bolt for permanent service. Neat and attractive styling is ideal for mounting on front panels.

**AVAILABLE IN 10 COLORS:**  
 BLACK, BROWN, RED, ORANGE, YELLOW, GREEN, BLUE,  
 VIOLET, GRAY AND WHITE.



**MODEL C-0**  
 Rated for  
 5,000 volts DC

## HIGH VOLTAGE SWITCHES



For use in high voltage, low current circuits where complete isolation is required. Nominal rating 5,000 volts DC or AC (peak). Model A or D switch may be used in lower duty circuits up to 10,000 volts DC. Current rating 500 Milliampere, steady state (when not being switched). 5 Ma. when switching. Isolated for 15,000 volts DC test to ground. Special Modified Diallyl Phthalate used in construction.

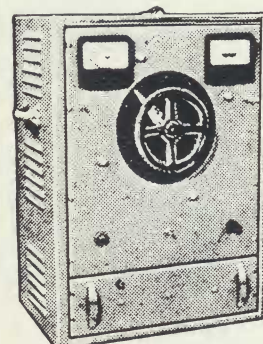
MODEL	TYPE
A	2 Pole Reversible (for polarity reversing of power supplies)
B	D.P.D.T.
C	3.P.D.T.
D	4 Position (1 Gang)
E	6 Position (1 Gang)
F	8 Position (1 Gang)
G	10 Position (1 Gang)



# HEAVY DUTY POWER SUPPLIES

These industrial type power supplies are built for service and efficiency. All are of the transformer type and employ husky components that have been selected for their power handling capacity. Controls are arranged so that operation is simple and the units contain a number of safety features for protection of personnel and equipment. Output is continuously variable from zero to full rated values. These supplies are unregulated and standard ripple is 5% or less. Ripple of from 0.01% to 1%, and regulated supplies are available on special order. All power supplies have automatic overload cutout control circuits.

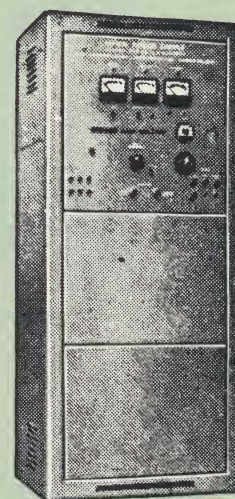
MODEL	VOLTAGE	CURRENT
F-100V	0-100	10 Amp.
F-500V	0-500	3 Amp.
F-6001	0-1000	2 Amp.
F-6002	0-2000	1 Amp.
F-6003-A1	0-3000	100 MA.
F-6003-AV	0-3000	500 MA.
F-6003-AK	0-3000	1 Amp.
F-6005-A1-H	0-5000	100 MA.
F-6005-AV	0-5000	500 MA.
F-6005-A1K	0-5000	1 Amp.
F-6010-A1	0-10,000	100 MA.
F-6010-AV	0-10,000	500 MA.
F-6020-A05	0-20,000	50 MA.
F-6030-A3	0-30,000	300 MA.
F-6050-T	0-50,000	½ MA.
F-6100-T	0-100,000	.1 MA.



## 3 PHASE HEAVY DUTY POWER SUPPLIES

For use in applications where high voltages at extra high currents are required. Either fixed or fully variable types are available. Automatic circuits protect against over-current conditions, turning off main power in a split second. Used for plasma research, electron beam furnaces, plate power and condenser charging. Voltage or current regulated types available.

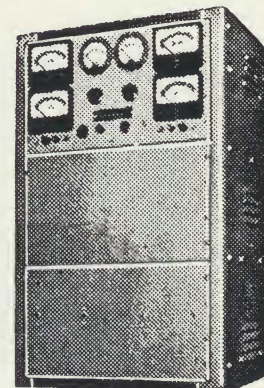
MODEL	VOLTAGE	CURRENT AMPS
A 1-A	0 to 100	100
A 1-B	0 to 100	1000
A 10A	0 to 1,000	5
A 10B	0 to 1,000	10
A 30A	0 to 3,000	5
A 31	0 to 3,000	10
A 32	0 to 3,000	20
A 50	0 to 5,000	5
A 51	0 to 5,000	10
A 72	0 to 7,500	10
A 100	0 to 10,000	5
A 110	0 to 10,000	10
A 200	0 to 20,000	5
A 300	0 to 30,000	5
A 500	0 to 50,000	5



## CONSTANT CURRENT POWER SUPPLIES

Designed for application where output current must remain constant regardless of loading resistance changes. Used for magnet fields, plating applications, gaseous lamps. Dependable magnetic current stabilizer has no moving parts, no tubes, no transistors to replace. Simply set current to desired level, no balancing or other adjustments needed. Ideal for lamp operation since operating state ionizing voltage in no way affects lamp current. Standard hum level 5%. Lower hum levels available on order.

MODEL	MAX. VOLTAGE	CURRENT
C-25-100	25 V.	100 Amp.
C-70-70	70 V.	70 Amp.
C-500-10	500 V.	10 Amp.
C-Dual-500-10	500 or 1000 V.	10 or 20 Amp.
C-1000-5	1000 V.	5 Amp.
C-3000-1	3000 V.	1 Amp.
C-5000-1	5000 V.	1 Amp.
C-10K-5H	10 KV	500 MA.





# OTHER PRODUCTS MANUFACTURED BY INDUSTRIAL INSTRUMENTS INC.

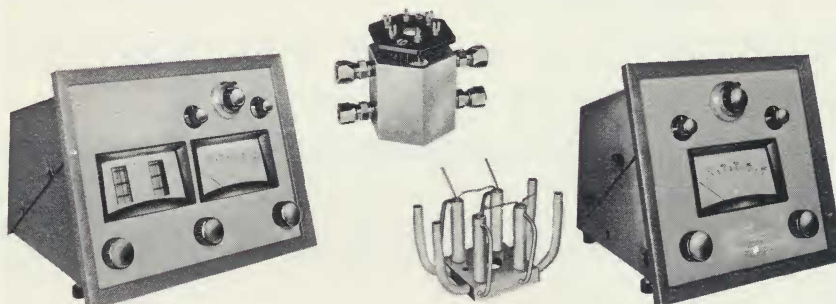
## ELECTRICAL/ELECTRONIC INSTRUMENTS AND EQUIPMENT

... for test, measuring and control applications in the laboratory and on the production line. Instruments for the precision measurement of voltage, capacitance, resistance and inductance of materials and components. "Lab standard" units for the calibration and accuracy check of test equipment. Instrumentation for the evaluation of insulation properties of materials. Complete systems for high speed testing, sorting and inspection of mass produced components.



## THERMA BRIDGE CONDUCTIVITY EQUIPMENT ...

A complete line of precision instruments housed in advanced, functionally designed cabinets, with the latest in circuitry and design. Instruments include: Therma Bridge Gas Analyzer, Therma Bridge Power Supply and Control Unit, and Therma Bridge Stabilized Temperature Sensing Unit. Precision engineered Therma Bridge sensing cells in two metal-mass weights are also available.



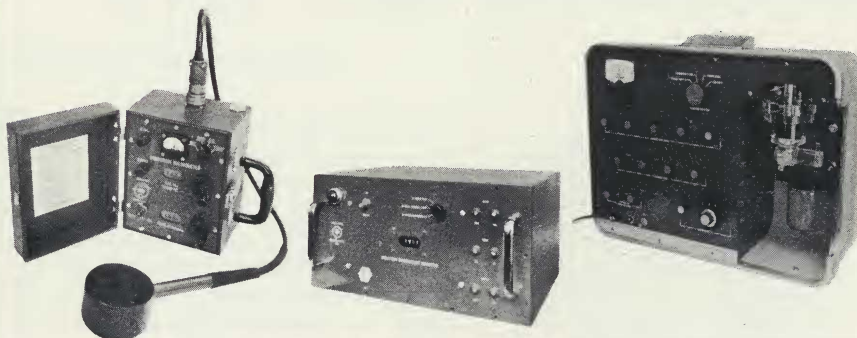
## ELECTROLYTIC CONDUCTIVITY EQUIPMENT ...

A comprehensive line of electrolytic conductivity equipment for the measurement and control of solution concentration. Bridges, Recorders and Cells are available for use in all conductive solutions ranging from distilled water to concentrated acids and alkalis, and in all temperature ranges.



## OCEANOGRAPHIC INSTRUMENTS

... portable Electrodeless Induction Salinometers for measuring salinity, temperature, conductivity and depth in situ and of samples. The electrodeless inductive conductivity cell permits "in-the-field" measurements by unskilled personnel and frees conductometric analysis from the laboratory. Equipment is sturdily constructed and features stable, solid-state electronics for maintenance free operation.



*Industrial Instruments Inc.*

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Part No. 30744D

Printed in U.S.A.



Instruments

# Industrial Instruments INC.

89 COMMERCE ROAD  
CEDAR GROVE, N. J., U.S.A.

## PRECISE MEASUREMENTS DIVISION PRICE SCHEDULE

### PACKAGED POWER SUPPLIES

Model No.	Price
15-0-15-500 MA	\$ 50.00
30-0-30-100 MA	50.00
05-KV-5 MA	50.00
1-KV-5 MA	60.00
2-KV-5 MA	70.00
3-KV-5 MA	80.00
5-KV-5 MA	95.00
7.5-KV-5 MA	110.00
10-KV-5 MA	125.00
15-KV-5 MA	140.00
20-KV-5 MA	235.00
30-KV-5 MA	300.00
50-KV-5 MA	600.00
75-KV-5 MA	750.00
100-KV-5 MA	1100.00

### VOLT BOXES

VZA-1	\$ 54.00
VZA-5	54.00
VZA-10	54.00
VZA-100	63.00
VZA-1K	85.00
VZA-2K	100.00
VZA-4K	110.00
VZA-5K	125.00

### HIGH VOLTAGE ZENER REGULATORS

ZA-1K	\$50.00
ZA-2K	55.00
ZA-3K	60.00
ZA-4K	70.00

### HIGH VOLTAGE DC POWER SUPPLIES

	RF	1 MA	5 MA
6000-1		\$160.00	\$200.00
6000	\$145.00	175.00	225.00
6005	150.00	200.00	250.00
6010	155.00	225.00	275.00
6015	160.00	250.00	300.00
6025	215.00	275.00	350.00

Mirror Scale Option — Add \$50.00

Current Meter Option — Add \$50.00

### INSULATION TEST SETS

	AC	DC	AC and DC
3000	\$165.00	—	\$250.00
3010	250.00	—	400.00
3050	500.00	—	650.00
3100	700.00	—	1100.00
5000	175.00	—	300.00
1000	250.00	—	375.00
1500-AC	285.00	—	—
2500-AC	400.00	—	—
2500-DC	—	420.00	—
4000-DC	—	600.00	—

### KILO VOLTMETERS

50-AC/DC	\$ 400.00
60-DC	350.00
Model 40 Divider	1850.00

### HIGH VOLTAGE CONNECTORS

Model No.	Price
C-0	\$ 5.00
C-1	10.00

Quantity Prices Available on Request

### HIGH VOLTAGE SWITCHES

A	\$20.00
B	22.00
C	25.00
D	20.00
E	22.00
F	24.00
G	26.00

Quantity Prices Available on Request

### HEAVY DUTY POWER SUPPLIES

F-100V	\$ 650.00▲
F-500V	800.00▲
F-6001	975.00*
F-6002	985.00*
F-6003-A1	375.00*
F-6003-AV	550.00*
F-6003-AK	1100.00*
F-6005-A1-H	550.00*
F-6005-AV	775.00*
F-6005-A1K	1200.00*
F-6010-A1	800.00*
F-6010-AV	3000.00*
F-6020-A05	975.00*
F-6030-A3	5000.00*
F-6050-T	600.00
F-6100-T	1100.00

▲ Isolated; Either side may be grounded.

\*Not isolated; output reversing feature at \$50.00 add.

### 3 PHASE HEAVY DUTY POWER SUPPLIES

A1-A	\$2000.00
A1-B	12500.00
A10A	2500.00
A10B	3700.00
A30A	4500.00
A31	6750.00
A32	7850.00
A50	5900.00
A51	8350.00
A72	9250.00
A100	10250.00
A110	14575.00
A200	16450.00
A300	19200.00
A500	27500.00

### CONSTANT CURRENT POWER SUPPLIES

C-25-100	\$ 980.00
C-70-70	1700.00
C-500-10	1700.00
C-Dual-500-10	2750.00
C-1000-5	3000.00
C-3000-1	2500.00
C-5000-1	3450.00
C-10K-5H	3850.00

PRICES LISTED ARE F.O.B. CEDAR GROVE, N.J. AND SUBJECT TO CHANGE WITHOUT NOTICE.